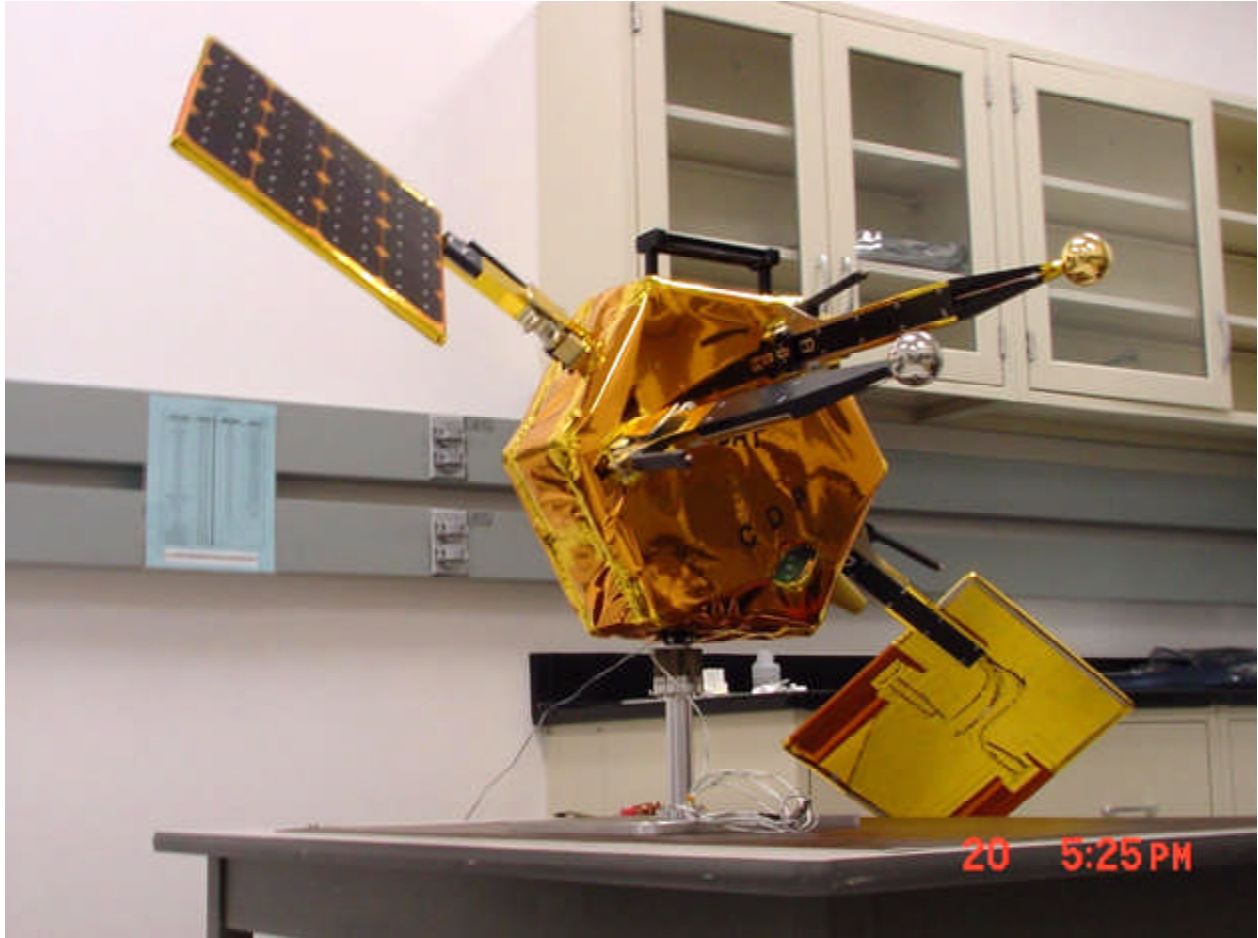


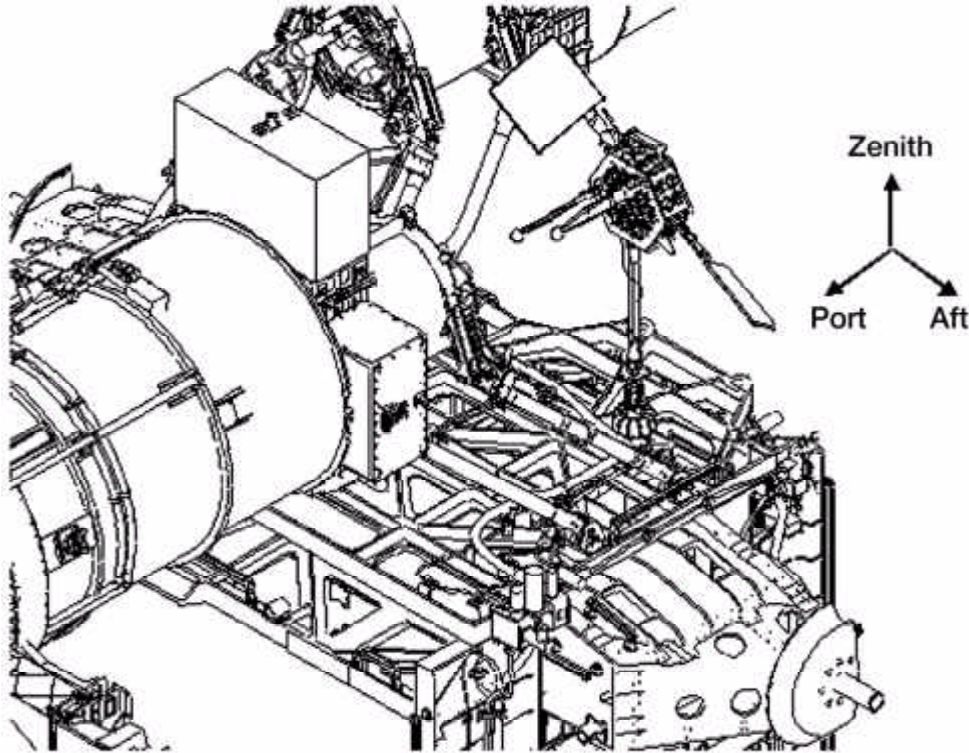
Floating Potential Probe Deployed on the International Space Station



Floating Potential Probe at the NASA Kennedy Space Center before launch.

In the spring and summer of 2000, at the request of the International Space Station (ISS) Program Office, a Plasma Contactor Unit Tiger Team was set up to investigate the threat of the ISS arcing in the event of a plasma contactor outage. Modeling and ground tests done under that effort showed that it is possible for the external structure of the ISS to become electrically charged to as much as -160 V under some conditions. Much of this work was done in anticipation of the deployment of the first large ISS solar array in November 2000. It was recognized that, with this deployment, the power system would be energized to its full voltage and that the predicted charging would pose an immediate threat to crewmembers involved in extravehicular activities (EVA's), as well as long-term damage to the station structure, were the ISS plasma contactors to be turned off or stop functioning. The Floating Potential Probe was conceived, designed, built, and deployed in record time by a crack team of scientists and engineers led by the NASA Glenn Research Center in response to ISS concerns about crew safety. Launched on ISS mission 4A and deployed on the ISS in December 2000, the device provides a direct measurement of the

electrical potential of the ISS with respect to its environment. The Floating Potential Probe has shown that, although the expected charging levels have so far not been realized, significant charging can occur, which still poses a threat to EVA astronauts, requiring a two-fault-tolerant approach during EVA.



Floating Potential Probe as installed on the top of P6 on the ISS.

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